

REMARKS

I. Status of the Claims

Claims 1-8 are pending in the application

Claims 1-8 are amended. No new matter is added.

II. Claim Objections

Claims 5, 7, and 8 are amended to avoid the minor informalities noted by the Examiner.

III. Claim Rejections 35 USC § 112

The rejection of claim 7 under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is traversed.

The Examiner states that the Applicant has not disclosed how the coefficients “a”, “b”, “c”, and “d” are determined from the rigidity and bending parameters of the flexible vane. The Examiner also states that the Specification discloses one set of values for the constants, however, it does not disclose what the corresponding values of the rigidity and bending parameters are.

Referring to the PreGrant Publication, paragraphs [0029] and [0030], the a, b, c, and d coefficients used in the relationship

$$L/Lo = ax^4 + bx^3 + cx^2 + dx + 1$$

are clearly identified as, 1.4946; -4.4452; 5.028; and -2.7254 respectively. In the relationship, x is the ratio C/Co, where C is an extension of the higher bending region 17 in Fig. 1 measured from the boundary of the fixation end portion 11, and Co is the length of the higher bending region 17. The relationship, when solved, gives the value of L/Lo where L is a width that varies along the length of the higher bending region 17 and Lo is the maximum width of the bending region. Solving the relationship gives a value for L/Lo. Now, knowing the value of L/Lo, the dimension of L can be obtained by fixing the dimension of Lo. Obviously, if the dimension of L is fixed, then the relationship is used to determine the dimension of Lo. It is our understanding

that it is not necessary to show how the coefficients are actually determined as this can be done by a person skilled in the art. What is important is that the coefficients needed for practicing the invention are disclosed. Therefore, for the reasons above, claim 7 is not indefinite and the Examiner is respectfully requested to withdraw this rejection.

IV. Claim Rejections 35 USC § 102

The rejection of claims 1, 5, and 8 under 35 USC § 102(b) as being anticipated by Ikeda et al., (US Patent No. 4,764,091 A) is traversed.

Ikeda is directed toward reducing the noise produced by the reed valves in automobile air-conditioners. Specifically, Ikeda has determined that the suction and discharge reed valves of conventional piston type compressors used in automobiles are subjected to complicated and irregular vibrations which cause noise. Looking at Fig. 3, Ikeda has determined that the movements of the two symmetrical portions (legs) 22a and 22b of the reed valve change in an irregular and unstable manner which results in complicated vibratory movements of the suction reed vales 11a. Ikeda then asserts that these vibratory movements are transmitted to the evaporator of the air conditioner which resonates with the vibrations to produce noise.

Ikeda solves this noise problem by reconfiguring the shape of the reed valves. Referring to Fig. 5A, the reed suction valve disclosed by Ikeda extends obliquely outward from the base support plate. Thus, by obliquely positioning the reed valve, Ikeda can provide a reed valve where the first and second planar portions (the legs) 22'a and 22'b have different lengths. As a result, see column 7, lines 48-52, the first and second planar portions 22'a and 22'b of the suction reed valve are now always subjected to different bending forces during the operation of the piston type compressor and, see column 7, lines 62-64, the displacement of the first planar portion 22'a always tends to be larger than that of the second planar portion 22'b as illustrated in Fig. 6.

Ikeda does not disclose a suction reed valve having planar portions (legs) which are symmetrical about a longitudinal axis of the flexible vane, of equal length and united by the fixation end portion as is disclosed by Applicants and positively recited in claim 1. Ikeda specifically teaches away from using planar portions of equal length.

Clearly, claim 1 avoids the Ikeda reference by specifically reciting, in combination, that the legs are symmetrical about a longitudinal axis of the flexible vane and of equal length. In addition, because Applicants legs are of equal lengths, they are not subjected to different bending forces during operation. Thus not only is the configuration of Applicants reed different from that of Ikeda, but it also operates in a totally different manner. While the prior art reed valve of Fig. 3 disclosed in Ikeda has legs which are of equal length, it does not include the limitations which are currently recited in claim 1. In addition, Ikeda does not disclose a flexible vane with a total width, which, from a fixation end portion of the flexible vane, initially presents a reduction and then begins to progressively increase towards a sealing end portion of the flexible vane, as is positively recited in claim 1.

Therefore, for the reasons given above, claim 1 clearly avoids the Ikeda reference and is considered to be in condition for allowance. Claims 5 and 8 depend from independent claim 1 and, therefore, are also considered to be in condition for allowance.

V. Claim Rejections 35 USC § 102

The rejection of claim 7 under 35 USC § 102(b) as being anticipated by Ikeda et al., (US Patent 4,764,091 A) as extrinsically evident from Schulze (US Patent No. 6,823,891 B2) is traversed. Claim 7 depends from claim 1. Therefore, for the reasons noted above it is Applicants' understanding that claim 7 avoids the art cited and is in condition for allowance.

VI. Claim Rejections 35 USC § 103

The rejection of claims 2, 3, and 4 under 35 USC § 103(a) as being unpatentable over Ikeda et al., (US Patent 4,764,091 A) and in view of Une et al., (PCT Publication WPO 01/98657) is traversed. Claims 2, 3, and 4 depend from claim 1. Therefore, for the reasons noted above, it is Applicants' understanding that claims 2, 3, and 4 avoid the art cited and each claim is believed to be in condition for allowance.

VII. Claim Rejections 35 USC § 103

The rejection of claim 6 under 35 USC § 103(a) as being unpatentable over Ikeda et al., (US Patent 4,764,091 A) is traversed. Claim 6 depends from claim 1. Therefore, for the reasons noted above it is applicants understanding that claim 6 avoids the art cited and is in condition for allowance.

CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

The Examiner is respectfully requested to contact the undersigned at the telephone number indicated below if the Examiner believes any issue can be resolved through either a Supplemental Response or an Examiner' Amendment.

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Respectfully submitted,

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